PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-098395

(43)Date of publication of application : 08.04.1997

(51)Int.Cl. H04N 7/14
H04N 7/18
// A42B 3/30

(21)Application number : 07-252453

(22)Date of filing : 29.09.1995

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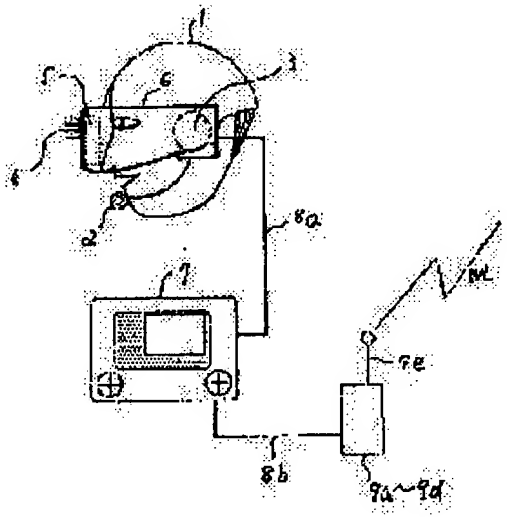
(54) COMMUNICATION HELMET

(57)Abstract:

PROBLEM TO BE SOLVED: To rationalize contact with a site where an accident or the like takes place by providing a radio transmission reception means and the communication helmet in which a microphone, a headphone, a video camera and a video display device are mounted.



SOLUTION: A standard helmet 1 is provided with a moving frame 6. The moving frame 6 is provided with a video camera 4 and a video display means 5 to confirm a transmission video. Furthermore, a microphone 2 and a headphone 3 are provided. Each input output device is connected to a signal processing means 7 via a cable 8a. Radio transmission reception means 9a-9d send a video signal and an audio signal processed by the signal processing means 7 by a radio wave of a prescribed frequency and receive the video signal and the audio signal from a control station. Furthermore, the signal processing means 7 is provided with a storage means, a display device and an input operation device for the video signal and the audio signal to conduct the switching, temporary storage, reproduction of each signal and display of the received control video signal. Thus, proper notice and command by an image are attained.

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CLAIMS

[Claim(s)]
[Claim 1] The video camera which photos the image of a site and is outputted as a transmitting-side video signal, The video presentation means for projecting said transmitting-side video signal in a visual field in sight, and checking coincidence with said image transmitting, The movable frame attaches said video presentation means and it enabled it to move to the inside and outside of a visual field, The communication helmet with which a signal-processing means for said transmitting-side video signal to have been inputted and to output a status signal to said video presentation means was provided, and said video camera and said movable frame were attached at least.
[Claim 2] The communication helmet according to claim 1 which has the 1st wireless transceiver means which changes said transmitting-side video signal into a radio signal, and transmits to a command place etc.
[Claim 3] The communication helmet according to claim 1 has the 2nd wireless transceiver means which receives the radio signal sent from the command place etc., and is outputted as a receiving-side video signal, switches said receiving-side video signal and said transmitting-side video signal, and it was made to display on said video presentation means.
[Claim 4] The communication helmet according to claim 1 which has the 3rd wireless transceiver means which a microphone and headphone are attached, changes into a radio signal the sound signal which said microphone outputted, and transmits to a command place etc., and the 4th wireless transceiver means which receives the radio signal sent from said command place etc., and outputs a sound signal to said headphone.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the exchange means of the voice and the video signal which are delivered and received by wireless between the customer engineer which patrols a plant at large-sized works, and its guardroom and control room (henceforth a command place etc.).
[0002]
[Description of the Prior Art] At carpenter places represented, such as an iron mill and petrochemical works, a majority of various kinds of large-sized facilities are built at the vast site. The customer engineer is patrolled every day for those maintenance check, and when connecting with a command place etc. on the way, it is using the transceiver, using the private telephone of the point which dropped in. On the other hand, when calling a customer engineer from a command place etc., usually it is based on a transceiver supposing the stopover point of a customer engineer, using a telephone or a loudspeaker. Since these approaches are communication with the customer engineer under round, and the voice between command places etc., transfer of detailed information is difficult. When especially accident occurs, in order to grasp correctly the location of the occurrence of accident, the part of the equipment, the situation of accident, etc., people will be dispatched to an accident site. It is difficult to still obtain an exact report promptly, and by the time it determines and connects the exact treatment approach, the actual condition will have required the time amount of C.
[0003]
[Problem(s) to be Solved by the Invention] In order for this invention to secure a customer engineer at a round place, and to give exact directions, in order to solve these problems, and to make a more concrete situation report perform from a dispatch site etc., or in order to rationalize the transfer of everyday activity information performed between a customer engineer, a command place, etc., it aims at offer of a means to use a sound signal and a video signal.
[0004]
[Means for Solving the Problem] The communication helmet which has the following functions is prepared.
(1) The video camera which photos the image of a site and is outputted as a transmitting-side video signal, The video presentation means for projecting said transmitting-side video signal in a visual field in sight, and checking coincidence with said image transmitting, The movable frame attaches said video presentation means and it enabled it to move to the inside and outside of a visual field, The communication helmet with which a signal-processing means for said transmitting-side video signal to have been inputted and to output a status signal to said video presentation means was provided, and said video camera and said movable frame were attached at least.
(2) The communication helmet according to claim 1 which has the 1st wireless transceiver means which changes said transmitting-side video signal into a radio signal, and transmits to a command place etc.
(3) The communication helmet according to claim 1 has the 2nd wireless transceiver means which receives the radio signal sent from the command place etc., and is outputted as a receiving-side video

signal, switches said receiving-side video signal and said transmitting-side video signal, and it was made to display on said video presentation means.
(4) The communication helmet according to claim 1 which has the 3rd wireless transceiver means which a microphone and headphone are attached, changes into a radio signal the sound signal which said microphone outputted, and transmits to a command place etc., and the 4th wireless transceiver means which receives the radio signal sent from said command place etc., and outputs a sound signal to said headphone.
[0005]
[Embodiment of the Invention] The gestalt of operation of this invention is explained using a drawing below. Drawing 1 is the block diagram having shown an example of the gestalt of operation of this invention. All the range of claims 1-4 is made to include on account of explanation. In drawing, 1 is the outline section of a communication helmet. It is the outline section of the helmet of the criterion set to JIS etc. 2 is the microphone carried in the helmet. Any are sufficient as the principle of sound pressure / electrical-potential-difference conversion, and in order to amplify the output signal of a microphone to required level, it forms microphone amplifier. 3 is both the lugs or the one ear headphone carried in the helmet. Although the principle of an electrical potential difference / sound pressure conversion is not asked, it forms the amplifier which amplifies an output signal to required level. 4 is a video camera. A site is photoed and a transmitting-side video signal is outputted. It constitutes from a lens, a CCD component, etc., and what it made lightweight small is used. What has large resolution as much as possible is used. A signal-processing means 7 to explain later performs control of this camera and a signal. 5 is a video presentation means. Said transmitting-side video signal which the video camera 4 outputted is projected in a visual field in sight, and it checks whether it is in agreement with the field of view of said site to transmit. Although there are some which were constituted with a lens system and small liquid crystal, by making the mirror in which luminescence of LED arranged to the line is otherwise reflected swing, there is a thing of the structure which changes into a planar image and is seen through a lens, and it is small and suitable. It is used also when switching and copying out on the video signal transmitted from the command place etc. 6 is a movable frame. It is the thing which said video presentation means 5 is attached [thing] and enabled it to make it move to the inside and outside of a visual field, and when seeing a site directly with the naked eye, the video presentation means 5 which has interrupted the field of view is moved to the upper and lower sides or right and left with a frame. 7 is a signal-processing means. The receiving-side video signal sent through a radio signal from the transmitting-side video signal which said video camera 4 outputted, the command place, etc. is inputted, it chooses any they are, and a status signal is outputted to said video presentation means 5. It can be made a free hand, such as hanging on a neck using a band. This signal-processing means 7 and each device carried in the communication helmet 1 are connected by cable 8a. Actuation drop 7a and alter operation machine 7b which display a video signal can be prepared on this signal-processing means 7. Since it is necessary to make it lightweight small, the liquid crystal display etc. is suitable. Moreover, the device of microphone 2 and others attached in the communication helmet is connected with the signal-processing means 7 by cable 8a. Drawing 2 explains in detail. 9a is the 1st wireless transceiver means. The transmitting-side video signal which the video camera 4 outputted is changed into a radio signal (WL), and it transmits to a command place etc. through antenna 9e. 9b is the 2nd wireless transceiver means. The radio signal (WL) sent from the command place etc. is received, and it outputs to said signal-processing means 7 as a receiving-side video signal. 9c is 3rd wireless transceiver means which changes into a radio signal the sound signal which the microphone 2 outputted, and transmits to a command place etc. 9d is 4th wireless transceiver means which receives the radio signal sent from the command place etc., and outputs a sound signal to headphone 3. In addition, the wireless transceiver means 9a and 9b usually use the electric wave of the high frequency more than a VHF band, in order to transmit the video signal of the photographic subject which moves. Since the wireless transceiver means 9c and 9d are audio transmissions, they can use the electric wave of a low frequency. However, the wireless transceiver means 9a-9d attain simplification of a circuit using the electric wave of the same frequency band of VHF or a UHF band. Moreover, the wireless transceiver means 9a-9d can be made to

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cellular phone

be able to build in the signal-processing means 7, and a cellular phone can also be made convenient. WL shows typically the radio signal which the wireless transceiver means 9a-9b send or receive. Drawing 2 is the block diagram of the circuitry of the signal-processing means 7. The same sign is given to the element which is common in drawing 1 , and explanation is omitted in part. 10 is the CC computing element CPU of the signal-processing means 7. An instruction is executed according to the decided program. In addition, in executing various instructions, an interruption circuit, a bus control circuit, a memory control circuit, etc. carry out actuation peculiar to CPU, but that a predetermined moving function should just occur, since CPU is not limited, explanation is omitted. 11 is ROM/RAM. In the former, according to directions of CPU, the latter mainly carries out the storage with a provisional data signal for the program which hastens the system of the signal-processing means 7. 12 is A-VRAM. Temporary storage of the sound signal of a microphone or headphone is carried out. V-RAM memorizes temporarily the video outlet signal of a video camera, or the video signal to a video presentation machine. 13 is the actuation drop IF. It connects with the internal circuitry of the signal-processing means 7 through actuation drop 7a on the signal-processing means 7, and a liquid crystal drive circuit. Transfer of a video signal and a control signal is performed. 14 is alter operation IF. It connects with the internal circuitry of the signal-processing means 7 through input **** 7b on the signal-processing means 7, and a drive circuit. The contact of a touch sensor or others etc. is used as input ****7b. 15 is communications control IF. The internal circuitry of the signal-processing means 7 and the wireless transceiver means 9a-9d are connected, and transfer of a video signal and a sound signal is controlled. 16 is Headphone IF. The internal circuitry and headphone 3 of the signal-processing means 7 are connected, and the sound signal read from A-RAM is delivered and received. 17 is Microphone IF. It connects with a microphone 2 and the internal circuitry of the signal-processing means 7, and the storage to A-RAM of the sound signal is controlled.

[0006] 18 is a video camera IF. It connects with a video camera 4, and the video signal which the control signal of a video camera 4 and the video camera 4 outputted is delivered and received. 19 is video presentation IF. It connects with the video presentation machine 5, and the video signal of the transmitting side read from the display-control signal and V-RAM of the video presentation machine 5 or a receiving side is delivered and received. 20 is the common control signal bus of the signal-processing means 7 interior, and delivers and receives each internal circuit, and the control signal and others between each interface (IF). 21 is a signal bus which transmits a sound signal and a video signal. The actually used signal is changed into the signal suitable for processing of the signal-processing means 7. Next, this drawing 2 explains the moving function of a communication helmet. Next, the example of the actuation which combined the signal-processing means 7 and the communication helmet 1 is explained.

a. A commander place sends the electric wave of the predetermined frequency which was decided beforehand and which was called and was modulated to the sound (tone signal).

b. The customer engineer which detected this tone signal by 9d of wireless transceiver means returns a predetermined response by wireless transceiver means 9c. It goes ahead with conversation by the microphone 2 and headphone 3 henceforth. Moreover, it switches and projects on a video signal from the command place where this transmitting-side video signal was transmitted to the command place from wireless transceiver means 9a, acting as the monitor of the situation of the site which the video camera 4 outputted with the video presentation vessel 5, or wireless transceiver means 9b received the video presentation machine 5. Actuation of the temporary storage of the aforementioned video signal and a sound signal, playback, a change of a signal, etc. is performed using actuation drop 7a and input **** 7b which were prepared in the signal-processing means 7. It can simplify and this signal-processing means 7 can also be built into a communication helmet.

[0007]

[Effect of the Invention] According to this invention, the whereabouts of the customer engineer under round can be promptly grasped from a command place etc. with the wireless transceiver means 9c and 9d. When especially accident occurs, through the wireless transceiver means 9a and 9b in a site side, in addition to voice, it can be prompt and information, such as a location of the occurrence of accident, a

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part of the equipment, and a situation of accident, can be correctly held with an image from a command place, an emergency unit, etc. Therefore, also after that, the prompt and exact treatment approach can be directed. Since the signal-processing means 7 was made into the free hand, when carrying out urgent migration, tuning of an instrument, etc., a degree of freedom is very high.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the exchange means of the voice and the video signal which are delivered and received by wireless between the customer engineer which patrols a plant at large-sized works, and its guardroom and control room (henceforth a command place etc.).

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PRIOR ART

[Description of the Prior Art] At carpenter places represented, such as an iron mill and petrochemical works, a majority of various kinds of large-sized facilities are built at the vast site. The customer engineer is patrolled every day for those maintenance check, and when connecting with a command place etc. on the way, it is using the transceiver, using the private telephone of the point which dropped in. On the other hand, when calling a customer engineer from a command place etc., usually it is based on a transceiver supposing the stopover point of a customer engineer, using a telephone or a loudspeaker. Since these approaches are communication with the customer engineer under round, and the voice between command places etc., transfer of detailed information is difficult. When especially accident occurs, in order to grasp correctly the location of the occurrence of accident, the part of the equipment, the situation of accident, etc., people will be dispatched to an accident site. It is difficult to still obtain an exact report promptly, and by the time it determines and connects the exact treatment approach, the actual condition will have required the time amount of C.
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EFFECT OF THE INVENTION

[Effect of the Invention] According to this invention, the whereabouts of the customer engineer under round can be promptly grasped from a command place etc. with the wireless transceiver means 9c and 9d. When especially accident occurs, through the wireless transceiver means 9a and 9b in a site side, in addition to voice, it can be prompt and information, such as a location of the occurrence of accident, a part of the equipment, and a situation of accident, can be correctly held with an image from a command place, an emergency unit, etc. Therefore, also after that, the prompt and exact treatment approach can be directed. Since the signal-processing means 7 was made into the free hand, when carrying out urgent migration, tuning of an instrument, etc., a degree of freedom is very high.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In order for this invention to secure a customer engineer at a round place, and to give exact directions, in order to solve these problems, and to make a more concrete situation report perform from a dispatch site etc., or in order to rationalize the transfer of everyday activity information performed between a customer engineer, a command place, etc., it aims at offer of a means to use a sound signal and a video signal.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram having shown an example of the gestalt of operation of this invention.
[Drawing 2] It is the block diagram of the circuitry of the pocket controller of this invention.
[Description of Notations]
1 Communication Helmet
2 Microphone
3 Headphone
4 Video Camera
5 Video Presentation Machine
6 Frame
7 Information Processing Means
7a Actuation drop
7b Alter operation machine
8a Cable wiring
8b Cable wiring
9a-9d Wireless transceiver machine
10 CPU
11 ROM and RAM
12 A-VRAM
13 Actuation Drop IF
14 Alter Operation IF
15 Communications Control IF
16 Headphone IF
17 Microphone IF
18 Video Camera IF
19 Video Presentation IF
20 Control Signal Bus
21 Sound Signal and Video Signal Bus
WL Electric wave

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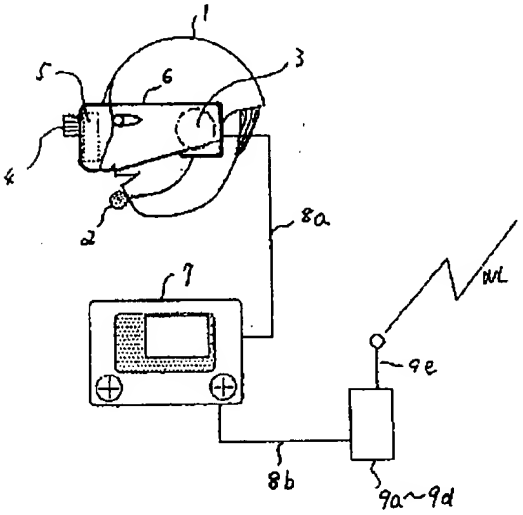
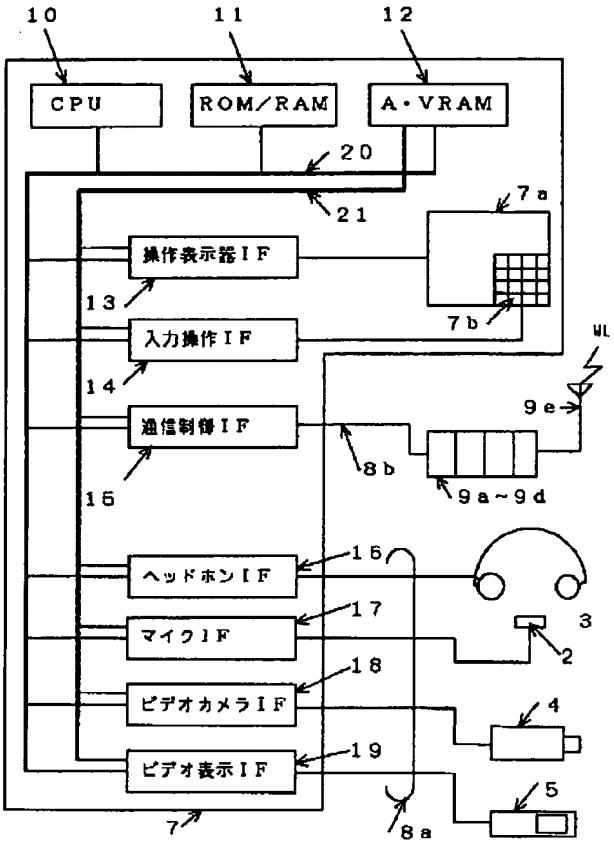
DRAWINGS

[Drawing 1]



2: Microphone
3: headphone
4: Camera
7: Signal processing means
5: Video preparation means
6: movable frame

[Drawing 2]



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